

REMARKS

Claims 1-23 are pending in the present application. By this reply, claims 10-23 have been added. Claims 1 and 14 are independent claims.

The specification and claims have been reviewed and revised to correct minor informalities, to clarify the invention, and to specify the acronyms in the claims as requested by the Examiner. These changes do not add any new matter to the disclosure.

I. Drawing Objection

The drawings have been objected to because they were labeled as "Related Art." To overcome this objection, certain figures have been labeled as "Background Art" to distinguish these figures from Applicant's invention. As such, the drawings satisfy MPEP 608.02g. Accordingly, the approval of the drawing changes submitted herewith in a Drawing Change Authorization Request and withdrawal of the objection is respectfully requested.

II. Title Objection

The title of the invention has been objected to for being neither precise nor descriptive. At the Examiner's request, a new title is provided herewith. Accordingly, reconsideration and withdrawal of the objection to the title is respectfully requested.

III. 35 USC § 102(b) Rejection

Claims 1-4 and 7-9 have been rejected under 35 USC § 102(b) as being anticipated by *Bish et al.* (US Patent No. 5,235,585). This rejection, insofar as it pertains to the present and pending claims, is respectfully traversed.

Regarding independent claim 1, the Examiner alleges that *Bish et al.* discloses the step of resetting location information of a supplementary spare area and cites column 6, lines 13-24 and column 6, lines 62-column 7, line 6 of *Bish et al.* to support his position. Applicant has carefully reviewed the entire *Bish et al.* reference including the portions specifically cited by the Examiner. Applicant respectfully submits that *Bish et al.* including the cited portions, teaches a secondary defect list and replacing secondary defects with the first available spare sector in the first available group. However, *Bish et al.* is absolutely silent on resetting the stored location information of a supplementary spare area to a nullified state in response to a formatting request as in Applicant's claimed invention. For example, as shown in Figure 6 of the present application, in step 603, in response to a formatting command at step 601, the location information (e.g. start and end addresses) of a supplementary spare area recorded on the recording medium is reset to a nullified state. As a result, when the defects registered in an old SDL are moved to a new PDL during the formatting process, consistent defect information can be provided and accessed by both a driver and a file system and other drivers can access the consistent defect information. This is not a concern that is addressed at all by *Bish et al.* since *Bish et al.* is merely

concerned with quickly locating a replacement spare sector for secondary defects using certain equations as set forth column 7, lines 55-59, 65-67 and column 8, lines 12-30.

Since it appears that the Examiner equates *Bish et al.*'s step of modifying the location information to identify different addresses, to Applicant's "resetting" step, claim 1 has been modified to emphasize that the resetting step resets the stored location information to a nullified state.

Therefore, *Bish et al.* fails to teach or disclose, *inter alia*:

Resetting the stored location information of the supplementary spare area to a nullified state in response to a formatting request

as recited in independent claim 1.

In the alternative, regarding claim 8, the Examiner alleges that *Bish et al.* discloses registering all sectors previously registered in an old SDL into a new PDL, as required by dependent claim 8. Applicant has carefully reviewed the portions of *Bish et al.* cited by the Examiner to support this position and respectfully submits that these portions of *Bish et al.* teach registering replacement sectors in a replacement sector list, and not registering sectors registered in an old SDL into a new PDL, which is part of a formatting process of Applicant's invention.

In view of the above, the invention as recited in independent claim 1 and its dependent claims 2-4 and 7-9 is patentable over *Bish et al.*, and reconsideration and withdrawal of the rejection based on these reasons is respectfully requested.

IV. 35 USC § 103 Rejection

Claims 5-6 have been rejected under 35 USC § 103(a) as being unpatenable over *Bish et al.* (US Patent No. 5,235,585) as applied to claims 1-4 and 7-9 above. This rejection, insofar as it pertains to the presently pending claims, is respectfully traversed.

As discussed above, *Bish et al.* does not teach or suggest the invention as recited in independent claim 1 from which claims 5 and 6 depend. Further, there is no motivation to modify *Bish et al.* to render the claimed invention obvious because *Bish et al.* is not at all concerned with (1) inconsistencies created during a reformatting process of a recording medium between a driver and a file system and (2) incompatibly recording between different drivers. Therefore, the invention as recited in independent claim 1 from which claims 5 and 6 depend is patentable over *Bish et al.*, and reconsideration and withdrawal of the rejection based on these reasons is respectfully requested.

V. New Claims

Claims 10-13 further define the invention as recited in independent claim 1 and are thus allowable at least for the same reasons that independent claim 1 is allowable as discussed above.

Independent claim 14 and its dependent claims 15-23 contain similar subject matter as claims 1-13, and are believed to be allowable over the prior art of record.

Accordingly, early indication of allowance of new claims 10-23 is respectfully requested.

Conclusion

For the foregoing reasons and in view of the above clarifying amendments, Applicant respectfully requests the Examiner to reconsider and withdraw all of the objections and rejections of record, and earnestly solicits an early issuance of a Notice of Allowance.

Should there be any outstanding matters which need to be resolved in the present application, the Examiner is respectfully requested to contact Esther H. Chong (Registration No. 40,953) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

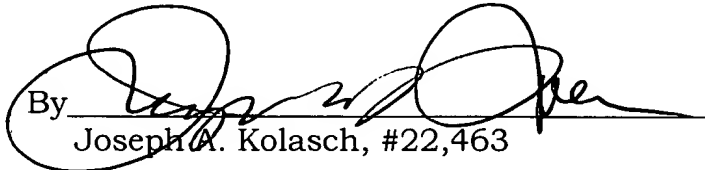
Attached hereto is a version showing changes made by this Amendment.

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), Applicant respectfully petitions for a one (1) month extension of time for filing a reply in connection with the present application, and the required fee of \$110.00 is attached hereto.

If necessary, the Commissioner is hereby authorized in this, concurrent, and further replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

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Attachment

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE TITLE

The title has been rewritten as follows:

--OPTICAL RECORDING MEDIUM AND METHOD FOR FORMATTING THE SAME WITH IMPROVED COMPATABILITY AND CONSISTENCY--

IN THE SPECIFICATION:

The paragraph beginning on page 1, line 15, has been amended as follows:

--The operations of writing and playing back data in a rewritable optical disc may be repeated. This repeated process alters the ratio of storage layers for recording data into the optical disc from the initial ratio. Thus, the optical discs lose [its] their characteristics and generate an error during recording/playback. This degradation appears as a defective area at the time of formatting, recording on or playing back from an optical storage medium. Also, defective areas of a rewritable optical disc may be caused by a scratch on its surface, particles of dirt and dust, or errors during manufacture. Therefore, in order to prevent writing into or reading out of the defective area, management of such defective areas is necessary.--

The paragraph beginning on page 4, line 14 has been amended as follows:

--As defective areas are compensated utilizing the spare area, methods of assigning the spare area plays an important role in the defective area management. Typically, the spare area may be allocated in each zone or group of the data area or

may be allocated in a designated portion of the data area. One method is to allocate the spare area at the top of the data area, as shown in FIG. 3. In such case, the spare area is called a [P] primary [S] spare [A] area (PSA). Namely, the data area excluding the primary spare area becomes the user area.--

The paragraph beginning on page 4, line 23 has been amended as follows:

-- The primary spare area, assigned in an initial formatting process, is assigned when a manufacturer produces the optical disc or when a user initially formats an empty disc. Moreover, when defect sectors are registered in the PDL according to the initial formatting or reformatting of optical disc, data cannot be recorded in those defect sectors, reducing the recording capacity. Therefore, to maintain the initial data recording capacity, a portion of the primary spare area equivalent to the defective sectors registered on the PDL slips into or becomes a part of the user area during formatting. Accordingly, the PSN of the user area to which a value of LSN=0 is assigned varies depending upon the defective sectors registered on the PDL, where LSN represent a logical sector number.--

The paragraph beginning on page 5, line 13 has been amended as follows:

-- If the primary spare area becomes full by slipping or linear replacement, as shown in FIG. 4A, a new spare area may be assigned, for example near the end of the user area. Such additional spare area is called a supplementary spare area (SA-sup). The location information of the supplementary spare area is stored in

a specific area such as in [the] a SDL block (apart from the SDL), of [the] a DMA. Particularly, the location information includes the start address (the first sector number) and the end address (the last sector number) of the assigned supplementary spare area. Thus, the size as well as the location of the supplementary spare area can be ascertained from the information.--

The paragraph beginning on page 6, line 2 has been amended as follows:

-- The assigned supplementary spare area may be enlarged when necessary as shown in FIG. 4B. Also, the location of the extended supplementary spare area is stored in the specific area of the DMA as in the initial assignment of the supplementary spare area. However, since a location information is already stored in the DMA, the start address of the supplementary spare area in the location information is modified. As a result, the location information of the supplementary spare area is modified each time the supplementary spare area is enlarged.--

The paragraph beginning on page 6, line 11 has been amended as follows:

-- Moreover, even in optical recording mediums with assigned supplementary spare area as described above, defect sectors or blocks are registered in the PDL or SDL for defect area management. Accordingly, linear replacement and slipping replacement is utilized. However, for linear replacement, the optical pick-up must be transferred to and back from the spare area to the user area in order to record data for the defect blocks registered in the SDL within the assigned replacement

blocks. Repetition of this may deteriorate the system performance. As a result, the optical medium is reformatted to move the defect sectors registered in the SDL to the PDL, thereby reducing the number of linear replacements and improving the system performance.--

The paragraph beginning on page 7, line 1 has been amended as follows:

--The reformatting method is classified into a full formatting through certification and a simple formatting by which the SDL is transferred to the G₂-list of the PDL without certification process in order to reduce the formatting time. The P-list (primary list of defects) remains unchanged after the completion of the formatting but defective blocks of the SDL are stored as defective sectors in the G₂-list. Thus, the G₂-list may include defective sectors as well as normal sectors. Nevertheless, the normal sectors [is] are considered as defect sectors.—

The paragraph beginning on page 7, line 19 has been amended as follows:

-- In contrast, the simple formatting, shown in Fig. 5B, converts the SDL to the G₂-list without certification. Namely, the old DMA information is read and sectors in the P-list, G₁-list and G₂-list of the old PDL are converted to the P-list, G₁-list and G₂-list of a new PDL. Also, after converting the old SDL entries to sixteen PDL entries, the [converted] old SDL entries are disposed and the new PDL entries converted from the old SDL entries, are registered in the G₂-list of the new PDL.--

The paragraph beginning on page 8, line 4 has been amended as follows:

-- As such, [U]pon execution of a reformatting, the supplementary spare area is considered to be non-existent by the file system because the defect information of the SDL has been moved to the PDL. However, since the location information of the supplementary spare area is stored in the SDL block of the optical disk apart from the disposed SDL, the location information of the supplemental spare area is maintained without change in the SDL block. Thus, an assignment of the supplementary spare area is still considered to be existent by the driver, namely the physical driver. Because the file system recognizes whether a formatting has been executed while the driver cannot, the file system and the driver have inconsistent information regarding the supplementary spare area. Accordingly, different judgements between the file system and driver regarding the supplementary spare area may cause problems in the system control.--

The paragraph beginning on page 11, line 10 has been amended as follows:

-- Figs. 4A and 4B show assigning and expanding a supplementary spare area in a disc with a primary spare area as shown in Fig. 3;--

The paragraph beginning on page 12, line 1 has been amended as follows:

-- Generally, the present invention resets the location information of the supplementary spare area registered in the SDL block when an optical recording medium is formatted. Thus, the judgments of the file system and the driver would

match each other with respect to the supplementary spare area. Fig. 6 is a flow diagram showing the operation of a driver when formatting the optical recording medium according to an embodiment of the present invention.--

The paragraph beginning on page 12, line 8 has been amended as follows:

-- Referring to Fig. 6, upon receiving a formatting command (step 601), a judgement is made if a supplementary spare area has been assigned (step 602). If the supplementary spare area assignment exists, the location information of the supplementary spare area recorded in the DMA is reset (step 603) to an initial or nullified state. To reset the location information of the supplementary spare area, any one of a variety of methods may be utilized. In one example, all the location information values of the supplementary spare area may be converted to the lowest value (for example, 00h) or the highest value (for example, FFh), nullifying any previously stored address information. In another example, the location information may be converted into a specific code value according to a predetermined agreement. That is, the location information value may converted to a value which would allow the file system to recognize that the location information of the supplementary spare area has been reset when the file system receives the DMA information from the driver.--

The paragraph beginning on page 13, line 2 has been amended as follows:

-- After resetting the location information of the supplementary spare area in step 603 or if a supplementary spare area has not been assigned as determined in

step 602, a judgement is made whether the formatting is with certification (step 604). If the formatting is with certification, all sectors, including the sectors registered in the PDL and the SDL, [is] are certified as shown in Fig. 5A (step 605). Thus, sectors judged to have defects are registered in the new PDL and the old SDL and G₁ and G₂ list are disposed. On the other hand, if the formatting is judged to be without certification, all sectors registered in the SDL [is] are registered in the new PDL without change as shown in Fig. 5B (step 606). In both cases of formatting (with or without certification), the effect is registering defective sectors previously registered in the old SDL to the new PDL by the formatting process.--

The paragraph beginning on page 13, line 13 has been amended as follows:

-- Upon completion of formatting as described above, the sectors of the supplementary spare area [equivalent] corresponding to the defective sectors registered on the new PDL slip[s] into and become[s] a part of the user area to maintain the initial data recording capacity. At this time, recognizing that a formatting has been performed, the file system disposes the information of the supplementary spare area. Accordingly, the information of the supplementary spare area is disposed from both the driver and the file system after [a] the formatting.--

The paragraph beginning on page 14, line 6 has been amended as follows:

-- Thus, according to the optical recording medium and method of formatting the optical recording medium in the present invention, the location information of the supplementary spare area registered in the DMA is reset when the optical

recording medium is formatted. This allows the judgements of the file system and the driver regarding the supplementary spare area to match each other, thereby leading to a consistent system control and maintenance of compatibility when the optical recording medium is transferred to different drivers.--

IN THE CLAIMS:

The claims have been amended as follows:

1. (Amended) A method of formatting an optical recording medium stored therein with location information of a supplementary spare area, the method comprising:

- (a) resetting [a] the stored location information of [a] the supplementary spare area to a nullified state in response to a formatting request; and
- (b) formatting the optical recording medium in response to the formatting request [converting the supplementary spare area to a user area].

2. (Amended) A method of claim 1, further compris[es]ing: determining if a supplementary spare area has been assigned prior to said resetting step (a) and said formatting step (b), wherein [~~resetting the location information of a supplementary spare area and converting the supplementary spare area to a user area,~~] said steps (a) and (b) are performed if a supplementary spare area has been assigned.

3. (Amended) A method of claim 1, wherein said resetting step (a) comprises converting the location information of the supplementary spare area to a predetermined value which indicates that the location information of the supplementary spare area has been reset to the nullified state.

7. (Amended) A method of claim 1, wherein [in] said formatting step (b)[,] includes registering sectors judged to have defects into a new PDL (primary defect list), if the [formatting] optical recording medium is to be formatted [is] with certification.

8. (Amended) A method of claim 1, wherein [in] said formatting step (b)[,] includes registering all sectors previously registered in an old SDL (secondary defect list) into a new PDL (primary defect list), if the optical recording medium is to be formatt[ing]ed [is] without certification.

9. (Amended) A method of claim 1, wherein the location information of the supplementary spare area is stored in a SDL (secondary defect list) block of a DMA (defect management area) of the optical recording medium.

New claims 10-23 have been added.